Vol. 70, No. 5 Established 1884 May 1953

ARCHIVES OF PEDIATRICS

A MONTHLY DEVOTED TO THE

DISEASES OF INFANTS AND CHILDREN

JOHN FITCH LANDON, M.D., Editor

LEADING ARTICLES IN THIS NUMBER

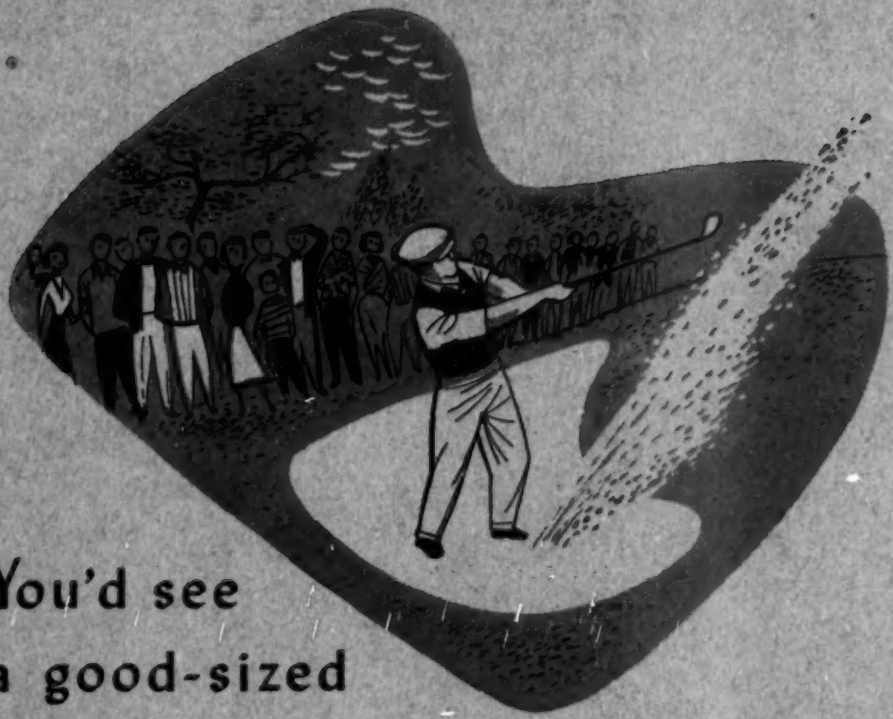
Multiple Sensitivities in a Patient with Bronchial Asthma.
Alexander Sterling, M.D. 141

The Excretion of Methionine in Children in Health and Disease With a Note on the Value of Methionine Tolerance Test as an Index of Liver Function.
A. Shafih Abbasy, M.D., D.Ch., M.D., and E. A. Eisa, M.Sc., Ph.D. 146

Oscar Menderson Schloss, M.D. (Obituary). 157

Pediatrics at the Turn of the Century. The Etherization of Children.
Walter G. Elmer, M.D. 160

E. B. TREAT & CO., Inc., *Publishers*, 45 East 17th Street, NEW YORK, 3
Yearly Subscription $6.00 (Foreign $6.75); Single Copy, $1.00
COPYRIGHT, 1953, BY E. B. TREAT & CO., INC., ALL RIGHTS RESERVED
Entered as second-class matter Feb. 5, 1892, at New York, N. Y., P. O., under the Act of March 3, 1879



You'd see a good-sized gallery

... with all the patients who represent the 44 uses for short-acting

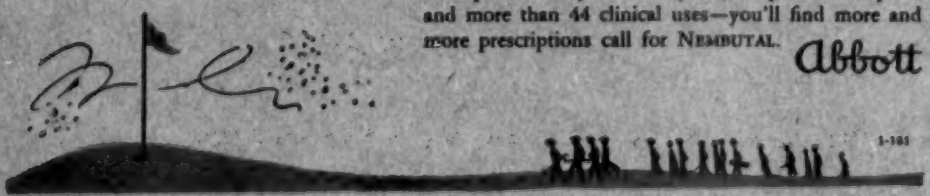
Nembutal®

WHAT YARDSTICK DO YOU USE TO DETERMINE the drug you write on your prescription? If the drug is a barbiturate—such as short-acting NEMBUTAL (Pentobarbital, Abbott)—you can measure it, compare it and sum it up in these four short sentences:

1. *Short-acting* NEMBUTAL *can produce any desired degree of cerebral depression—from mild sedation to deep hypnosis.*
2. *The dosage you need is small—only about half that of many other barbiturates.*
3. *There's less drug to be inactivated, shorter duration of effect, wide margin of safety and usually no morning-after hangover.*
4. *In equal oral doses, no other barbiturate combines quicker, briefer, more profound effect.*

Perhaps that's why—after 23 years, 598 published reports and more than 44 clinical uses—you'll find more and more prescriptions call for NEMBUTAL.

Abbott



1-161

A modern approach to

optimum nutrition for allergic infants...

Nutramigen

A truly hypoallergenic infant formula, Nutramigen represents a new and modern approach to the maintenance of optimum nutrition in allergic infants.

Nutramigen does not merely substitute one source of protein for another, as in the use of goat's milk or soy bean "milk" in place of cow's milk. Nutramigen's protein nutrients are supplied by Amigen, a casein hydrolysate in which the protein molecules have been completely broken down into amino acids and small peptides.

Nutramigen's fat is a highly refined vegetable oil. Its carbohydrate consists principally of Dextri-Maltose. Synthetic B vitamins and chemically pure minerals are incorporated in amounts corresponding to those in milk. Supplemental amounts of vitamins A and D are also included.

Because all its constituents are hypoallergenic and easily assimilated, Nutramigen's usefulness is not restricted to milk protein sensitivity alone. It is equally valuable for infants with other food allergies, and in various digestive disturbances.

Supplied in convenient powdered form, Nutramigen is easy to prepare. One packed level measure to 2 ounces of water gives a formula supplying 20 calories per fluid ounce.

Nutramigen

MEAD

MEAD JOHNSON & COMPANY
Evansville 21, Ind., U. S. A.

THE TRUTH ABOUT
FROZEN ORANGE JUICE

Significant Dietary Advantages Of Fresh-Frozen Minute Maid Orange Juice Over Home-Squeezed Orange Juice Shown By Independent Research

RECENT assays [1] emphasize the nutritional superiority of reconstituted Minute Maid Fresh-Frozen Orange Juice over home-squeezed orange juice in three important respects:

a. Average levels of natural ascorbic acid were significantly *higher* in Minute Maid;

b. Peel oil content was significantly *lower* in Minute Maid;

c. Bacterial counts were dramatically *lower* in Minute Maid.

Two chief reasons for Minute Maid's higher ascorbic acid content are advanced by qualified technical experts:

First, oranges vary widely in ascorbic acid content due to differences in varieties, rootstocks, and exposure to sunshine during ripening.[2] Thus, whole oranges, squeezed a few at a time in the home, provide a highly erratic source of Vitamin C. Yet because this vitamin is not well-stored in the body, optimum nutrition makes desirable a uniformly high intake. Each can of Minute Maid, however, represents the pooling of juice from hundreds of thousands of oranges; thus wide variations in nutrients from orange to orange tend to be eliminated.

Second, because it is frozen, Minute Maid loses none of its ascorbic acid content during the time lag between producer and consumer.[3] Whole fruit, however, is subjected to variations in temperature, and care in handling cannot be maintained throughout the journey from tree to table. Controlled laboratory tests have shown an average ascorbic acid loss of 10.7% in whole oranges after 11 days under simulated storage and shipping conditions.

Peel oil, previously shown to cause allergic response and poor tolerance, especially in infants,[4] is held to an arbitrary minimum in Minute Maid. Samples of home-squeezed juice expressed by typical housewives showed peel oil contents up to 700% higher than Minute Maid.

Bacterial counts were found to be as high as 350,000 per ml. in home-squeezed samples — but were uniformly low in Minute Maid. Technicians ascribe this to the combination of rigid sanitary controls in the Minute Maid process and the low pH and low temperatures at which the juice is kept. In the case of home-squeezed juice, high bacterial counts are doubtless due to contamination from the exterior peel which is unknowingly added to the juice during preparation.

In view of the above findings, more and more physicians now specify Minute Maid Fresh-Frozen Orange Juice in lieu of home-squeezed orange juice where optimum year-around intake of natural Vitamin C is indicated.

REFERENCES

(1) *Rakieten, M. L., et al., Journal of the American Dietetic Association, October, 1951.*

(2) *U. S. Department of Agriculture Technical Bulletin No. 753, December, 1940.*

(3) *Roy, W. R., and Russell, H. E., Food Industries, Vol. 20, pp. 1764-1765 (1948).*

(4) *Joslin, C. L., and Bradley, J. E., Journal of Pediatrics, Vol. 39, No. 3, pp. 325-329 (1951).*

MINUTE MAID CORPORATION, 488 Madison Ave., New York 22, N. Y.

Wallace R. Roy, Ph.D., Director of Research

TO CONTRIBUTORS AND CORRESPONDENTS OF
ARCHIVES OF PEDIATRICS

Subscription $6.00 a Year, in Advance **Foreign $6.75** **Single Copy, $1.00**

Editorial Communications address to JOHN F. LANDON, M.D., 120 East 75th Street, New York 21
Business Communications address to E. B. TREAT & Co., INC., 45 East 17th Street, New York 3

ORIGINAL ARTICLES, brief reports of rare and interesting cases, or new modes of treatment are solicited, but none will be considered for publication except with the distinct understanding that it is contributed exclusively to this journal. Manuscripts must be typewritten, double-spaced, and the original, not the carbon, copy submitted. The editor and publishers will not be responsible for views expressed.

ILLUSTRATIONS, as in the judgment of the editor are necessary, will be furnished free when satisfactory photographs or drawings are supplied. Photographs must be clear and distinct; drawings must be in India ink on white paper.

COPYRIGHT. — Original communications appearing in this journal are protected by copyright and can not be reproduced, either wholly or in part, without permission of the publishers.

REPRINTS of articles appearing among "Original Communications" may be ordered immediately upon receipt of galley proof by communicating direct with the publishers, E. B. Treat & Co., Inc., 45 East 17th Street, New York 3, who will supply their schedule of prices.

DISCONTINUANCES. — The publishers must be notified when a subscriber wishes his journal stopped and all arrearages must be paid. Without such notification it is assumed that a continuance is desired. Journals returned are not notice of discontinuance.

REMITTANCES should be made by check, draft, post office or express money order. If currency is sent, the letter should be registered. Stamps in amounts under one dollar are acceptable.

CHANGE OF ADDRESS NOTICE should give both the old and the new and state if change is permanent or temporary.

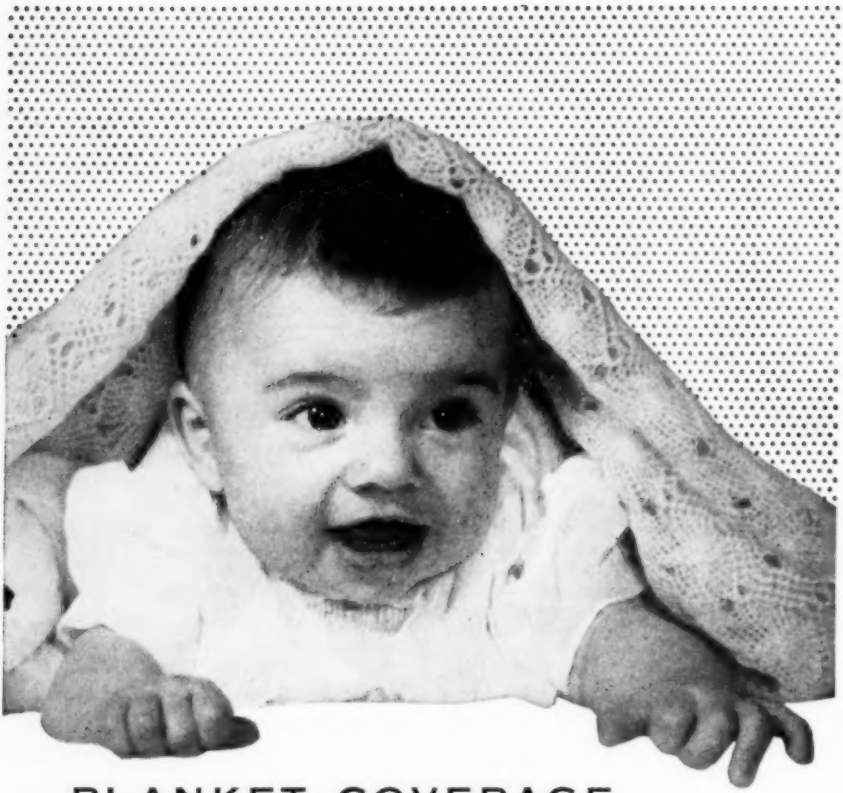
CONTENTS

ORIGINAL COMMUNICATIONS

Multiple Sensitivities in a Patient with Bronchial Asthma.
ALEXANDER STERLING, M.D. 141

The Excretion of Methionine in Children in Health and Disease With a Note on the Value of Methionine Tolerance Test as an Index of Liver Function.
A. SHAFIK ABBASY, M.D., D.Ch., M.D., AND E. A. EISA, M.Sc., Ph.D. 146

(Continued on page 5)



BLANKET COVERAGE

Generous amounts of the vitamins most frequently prescribed . . . in stable, palatable, readily absorbed

FORMULA, EACH CC.:	
Vitamin A	10,000 U.S.P. units
Vitamin D	2,000 U.S.P. units
Thiamine hydrochloride	3 mg.
Riboflavin	0.8 mg.
Niacinamide	15 mg.
Vitamin C	100 mg.

DAPTA®

(Improved Formula)

MULTIVITAMIN PREPARATION
FOR INFANTS AND CHILDREN

SUPPLIED: Bottles of 15 and 30 cc., with graduated dropper.

DAPTA has no expiration date . . . refrigeration is unnecessary.

PHILADELPHIA 2, PA.

Wyeth®

(Continued from page 3)

OBITUARY

Oscar Menderson Schloss, M.D. 157

PEDIATRICS AT THE TURN OF THE CENTURY

The Etherization of Children.
WALTER G. ELMER, M.D. 160

DEPARTMENT OF ABSTRACTS

Kohn, K. H.; Milzer, A. and MacLean, H.: Prophylaxis of Rheumatic Fever with Penicillin given Orally. (Journal American Medical Association, 151:347, Jan. 31, 1953) 173

Hamm, F. C. and Harlin, H. C.: Management of the Undescended Testicle. (New York Journal of Medicine, 53:295, Feb. 1, 1953) 173

BOOK REVIEWS

On the Bringing Up of Children. Edited by John Rickman, M.D. 174

Health Saboteurs. By Robert W. Davis, M.D. 174

ITEM

Familial Appendicitis: Four Cases in One Week 172

For CONSTIPATED BABIES

A gentle laxative modifier of milk. One or two tablespoonfuls in day's formula—or in water for breast fed babies—produce marked change in stool. Send for samples.

BORCHERDT MALT EXTRACT CO.
217 N. Wolcott Ave. Chicago 12, Ill.

Borcherdt MALT SOUP Extract

in whooping cough

ELIXIR BROMAURATE

GIVES EXCELLENT RESULTS

Cuts short the period of illness and relieves the distressing spasmodic cough. Also valuable in **Bronchitis** and **Bronchial Asthma.**

In four-ounce original bottles. A teaspoonful every 3 to 4 hours.

Extensively Used in Pediatric Practice.

GOLD PHARMACAL CO. NEW YORK CITY

He Fought Three Days and Nights

Lieutenant Colonel
Raymond G. Davis, USMC
Medal of Honor

COLD, BATTLE-WEARY, the Marines were re-deploying toward Hungnam. A rifle company was guarding a mountain pass vital to the withdrawal of two regiments. The company became surrounded. If help didn't come, 6,000 men were lost.

Into this situation, Lieutenant Colonel Davis boldly led his Marine battalion. Over eight miles of heavily defended icy trail they attacked, and across three ridges deep in snow.

They fought three days and nights.

But finally Colonel Davis reached and freed the company. He opened the pass and held it till the two regiments got by. Then, fighting through the last of the enemy and carrying his wounded with him, he led his own gallant battalion into safety.

"Korea and World War II have taught me," says Colonel Davis, "that courage is common to *all* armies; it's the *better equipped* side that has the edge. You're giving *our* men that edge every time you invest in a Defense Bond. For Bonds, which are personal savings for you, are also muscle for America's economy. Helping produce *better* equipment to protect the brave men who are protecting us all."

Peace is for the strong! For peace *and prosperity* save with U. S. Defense Bonds!

Now E Bonds pay 3%! Now, improved Series E Bonds start paying interest after 6 months. And average 3% interest, compounded semiannually when held to maturity! Also, all *maturing* E Bonds automatically *go on* earning—at the new rate—for 10 *more* years. Today, start investing in U.S. Series E Defense Bonds through the Payroll Savings Plan at work.

The U. S. Government does not pay for this advertisement. It is donated by this publication in cooperation with the Advertising Council and the Magazine Publishers of America.

proven HYPOALLERGENIC!

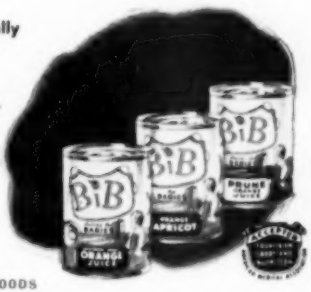
In a series of recently-conducted studies on the allergenicity of foodstuffs*, which included BIB Orange Juice for Babies as well as the by-products orange peel oil and orange seed protein, the following conclusions were proven:

Orange peel oil possesses primary toxic properties.

Orange seed protein has a high degree of anaphylactogenicity.

BIB Orange Juice for Babies is virtually devoid of peel oil and seed protein.

BIB Orange Juice for Babies is HYPO-ALLERGENIC and NON-TOXIC.



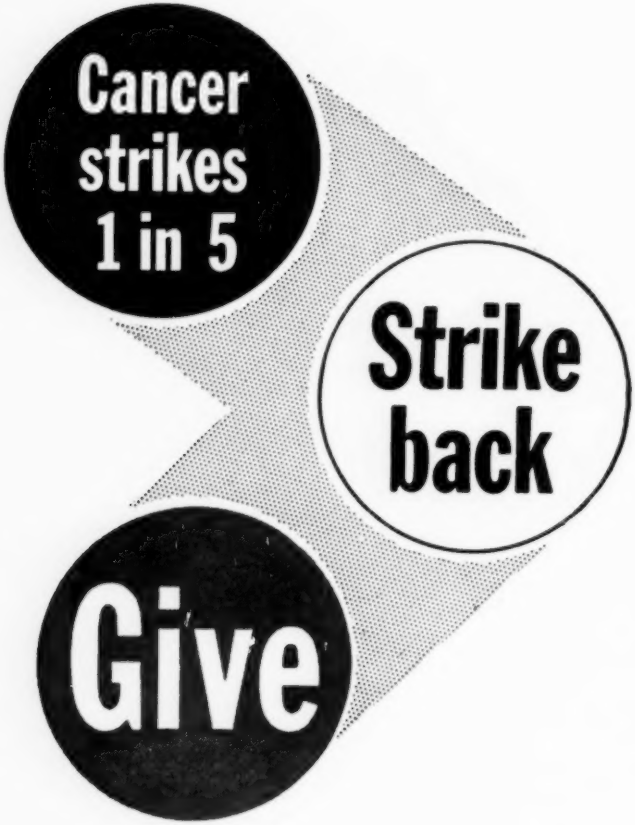
BiB
JUICES FOR BABIES

* *RATNER B., AIKMAN, H. L., and THOMAS, J. S.: Allergenicity of Modified and Processed Foodstuffs, Annals of Allergy, Vol. 10, No. 6, Nov.-Dec. 1952.*

We will be happy to send reprints of the above quoted article upon request. Address P.O. Box 866, Dept. FN-5.

Distributed in Canada through AYLMER BABY FOODS

THE BIB CORPORATION JUICES FOR BABIES—JUICES ONLY! **LAKELAND, FLA.**



Your gifts to the American Cancer Society help guard those you love.

Your dollars support research in a hundred laboratories and universities . . . spread life-saving information . . . ease pain and suffering . . . provide facilities for treatment and care of cancer patients.

It is a sobering fact that cancer may strike anyone tomorrow: strike back today with a gift to the American Cancer Society. You may mail it, simply addressed CANCER, c/o your local post office.

American Cancer Society

the ***most widely used***

ethical specialty for

care** of the **infant's skin

DESITIN®

OINTMENT

the pioneer external

cod liver oil therapy

Decisive studies[1,2] substantiate over 25 years of daily clinical use regarding the ability of Desitin Ointment to . . . . . *protect, soothe, dry and accelerate healing in . . .*

- **diaper rash** • **exanthema**
- **non-specific dermatoses**
- **intertrigo** • **prickly heat**
- **chafing** • **irritation**

(due to urine, excrement, chemicals or friction)

Desitin Ointment is a non-irritant blend of high grade, crude Norwegian cod liver oil (with its unsaturated fatty acids and high potency vitamins A and D in proper ratio for maximum efficacy), zinc oxide, talcum, petrolatum, and lanolin. Does not liquefy at body temperature and is not decomposed or washed away by secretions, exudate, urine or excrements. Dressings easily applied and painlessly removed.

Tubes of 1 oz., 2 oz., 4 oz., and 1 lb. jars

write for **samples** *and literature*

DESITIN CHEMICAL COMPANY

70 Ship Street • Providence 2, R. I.

1. Heimer, C. B., Grayzel, H. G. and Kramer, B.: Archives of Pediat. 68:382, 1951.
2. Behrman, H. T., Combes, F. C., Bobroff, A. and Leviticus, R.: Ind. Med. & Surg. 18:512, 1949.

EVERY LISTED PEDIATRIC SPECIALIST

was questioned by an independent research organization about an article published in the Archives of Pediatrics. These specialists were asked whether they agreed with the reprint material.

Of the pediatricians who believed their experience justified an opinion, 156—81.7%—replied yes to all three points in question.

4 out of 5 Leading Pediatricians agree that CREAM OF RICE

NEW, ½ Minute Cooking Time—10 Times Faster!
NEW, Easy-Pouring Spout!

a | **gives "more available caloric energy"**
than any wheat, rye, barley, corn or oat cereal. Of the 227 pediatricians answering definitely, 192—84.6%—said yes.

b | **is "more easily digestible"**
than any other kind of cereal. Of the 248 answering definitely, 212—85.5%—said yes.

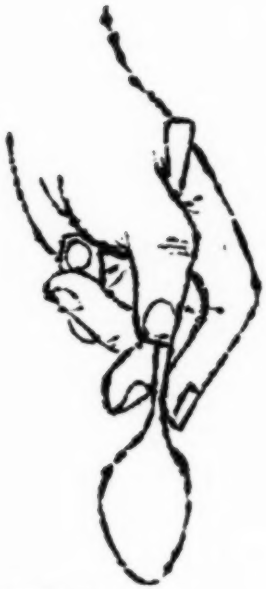
c | **gives "nutritional energy more rapidly"**
than any other kind of cereal. Of the 220 answering definitely, 178—80.9%—said yes.

In addition, Cream of Rice is

MOST HYPOALLERGENIC, TOO

As reported in the Archives of Pediatrics by Slobody, Untracht and Hertzmark, "rice . . . shows the fewest allergic reactions of any cereal checked . . . Even children potentially allergic to rice have been shown to tolerate it well when it is cooked in the presence of moisture."

WRITE FOR PROFESSIONAL SAMPLES:
GROCERY STORE PRODUCTS CO., DEPT. AP-5,
WEST CHESTER, PA.



oral penicillin which can be given with meals

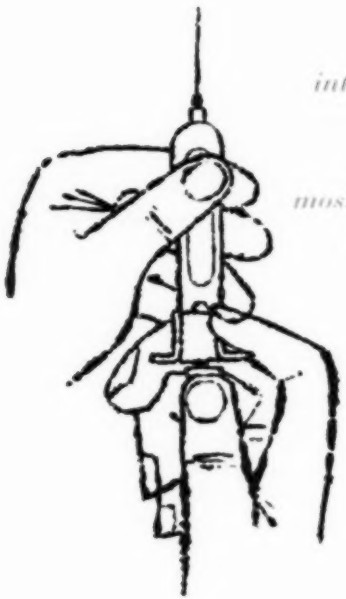
PERMAPEN ORAL SUSPENSION

Palatable, easy-to-take peach-flavored Permapen Oral Suspension will maintain constant demonstrable blood levels of penicillin in most patients when just one teaspoonful is given every eight hours. These blood levels are independent of the relation of dosage to meals — in fact, Permapen may be given with meals without loss of efficacy.

Supplied: 2 fl. oz. bottles, 300,000 units per 5 cc. teaspoonful.

Permapen*

(BRAND OF DIBENZYLETHYLENEDIAMINE DIPENICILLIN G)



intramuscular penicillin which gives most prolonged blood levels

PERMAPEN AQUEOUS SUSPENSION

Free-flowing, easy-to-give Permapen Aqueous Suspension can eliminate the Streptococcus carrier state in most rheumatic fever patients because just one injection will produce demonstrable blood levels in almost all patients for 14 days or longer—levels prolonged far beyond those attainable with other penicillin compounds.

Supplied: In sterile, single-dose disposable Steraject® cartridges, 600,000 units each, with foil-wrapped, sterile needle.

®TRADEMARKS, REG. PFIZER & CO., INC.

ANTIBIOTIC DIVISION Pfizer CHAS. PFIZER & CO., INC. BROOKLYN 6, N. Y.

Your choice of

3 basic infant formula products

all with an incomparable background

For almost half a century, Mead Johnson & Company's infant feeding products have had an incomparable background of clinical effectiveness and medical acceptance.

Babies fed Mead's formula products have been characterized by sturdy growth and low incidence of complications and feeding disturbances.

Dextri-Maltose
The Preferred Carbohydrate Modifier

Olac
Mead's Powdered Complete Formula

Lactum
Mead's Liquid Complete Formula

MEAD

MEAD JOHNSON & COMPANY • EVANSVILLE 21, INDIANA, U.S.A.

NEW

NONTOXIC DETERGENT
FOR INHALATION...

ALEVAIRE

TRADEMARK

Liquefies

PULMONARY SECRETIONS
IN
Tuberculosis • Bronchial Asthma • Bronchiectasis
Bronchitis • Bronchopneumonia, etc.

Alevaire is an aqueous solution of a new nontoxic detergent, oxyethylated tertiary octylphenolformaldehyde polymer, 0.125 per cent, in combination with sodium bicarbonate 2 per cent and glycerin 5 per cent.

Alevaire is inhaled by means of any standard aerosol or nebulizer technic.

Life Saving in Neonatal Asphyxia

WRITE FOR INFORMATIVE LITERATURE.

Alevaire is also serviceable as a vehicle for penicillin, streptomycin,* decongestants (such as Neo-Synephrine®) or bronchodilators (such as Isuprel®).

Usual Dose: 500 cc. by aerosolization in 24 hours.
Available in bottles of 500 cc.

WINTHROP-STEARNS INC. NEW YORK 18, N. Y. • WINDSOR, ONT.

*Terramycin is incompatible.

Neo-Synephrine and Isuprel, trademarks reg. U.S. & Canada, brand of phenylephrine and isopropylarterenol, respectively.

730 M

How Zest for Food leads to Zest for Life!

IT IS now clearly recognized that a baby's whole future development is profoundly influenced by his early experiences with food.

Happy mealtimes help a baby thrive emotionally as well as physically. You, yourself, have noticed how often a sunny disposition and sturdy vitality are found in the babies who eat with zestful appetite.

And as one of the many doctors who recommend Beech-Nut Foods, you will be glad to learn that there is a wider choice of appealing varieties than ever before—to *keep* mealtimes happy for your young patients.

Babies love them...

thrive on them!

A wide variety for you to recommend: Meat and Vegetable Soups, Vegetables, Fruits, Desserts—*Cooked* Cereal Food, *Strained* Oatmeal and *Cooked* Barley.

Beech-Nut

FOODS *for* BABIES

ACCEPTED
COUNCIL ON FOODS AND NUTRITION
AMERICAN MEDICAL ASSOCIATION

Every Beech-Nut Baby Food has been accepted by the Council on Foods and Nutrition of the American Medical Association and so has every statement in *every* Beech-Nut Baby Food advertisement.

ARCHIVES OF PEDIATRICS

VOL. 70 MAY 1953 No. 5

JOHN FITCH LANDON, M.D., Editor

EDITORIAL BOARD

HAROLD R. MIXSELL, M.D., New York PHILIP M. STIMSON, M.D., New York
REUEL A. BENSON, M.D., New York JOHN ZAHORSKY, M.D., St. Louis
FREDK. H. WILKE, M.D., New York

MULTIPLE SENSITIVITIES IN A PATIENT WITH BRONCHIAL ASTHMA

ALEXANDER STERLING, M.D.

Philadelphia

Quite often when a patient is referred for consultation and study the family doctor will state: "My patient with bronchial asthma does not respond to any kind of treatment. I have used every thing in the line of medication, all the new drugs, but he does not improve. I am sending him to you for examination and study. Please give me an outline of treatment for this patient."

The attending physician may not realize that some allergic individuals have mutiple states of sensitivity responsible for their condition, which do not reveal themselves at once.

Sometimes the patient is so ill with a mutiplicity of exciting causative factors overlapping each other, that he does not know which etiologic factor is responsible for recurrences. It is only when one manages to get days or weeks of well-being and absence of attacks that the doctor may be in a position, with the assistance of his patient, to analyze the suspicious causes responible for his recurring attacks. All suspicious etiologic factors must be checked. This is well illustrated by the following case report.

CASE REPORT

I. M., white, male, 49, single, newspaper reporter 20 years.

First seen at the office in June 1946, having been referred by his family doctor to an otolaryngologist, who in turn referred him to me for an allergic study.

Chief Complaint. Bronchial asthma and bilaterial persistent nasal

obstruction of two years duration, since October 1944. Irregular uncontrollable attacks of coughing, wheezing, dyspnea and orthopnea. Worse in winter and at night. At times he had 6 or 8 attacks of asthma in 24 hours. At other times he would be free from asthma for several weeks. Attacks of sneezing and rhinitis would alternate with persistent nasal obstruction, followed by asthma.

Family History. The family history is irrelevant.

Past History. Subject to colds in the Spring (May) and the Fall (October) but worse in the winter months. The nasal obstruction did not respond to any local treatment, to antihistaminics or to three electrocauterizations. For sometime he was treated with injections of an autogenous vaccine from his nose and throat. As the doses increased he complained of faintness, numbness and dizziness immediately after the injections. At first his physician thought it was due to an emotional upset but when 8 mms. of the above vaccine was given, the patient fainted. It was apparent that the fainting was not due to an emotional upset but something in the vaccine.

Upon investigation it was found that the vaccine was a pure culture of B. pyocyaneus[1]. The nose and throat man was advised to discontinue its further use.

Examination. Upon examination he appeared undernourished, a pale pathetic individual with an acute upper respiratory infection, i.e., pharyngitis and nasal obstruction. His chest revealed dry and moist râles and wheezing. The patient did not have any knowledge of enviromental contacts which might be in some way responsible for his respiratory difficulties.

We tested him for inhalants, foods, pollen, dust, molds and bacterial proteins responsible for upper respiratory infections. He did not produce any frank, allergic skin reactions but delayed inflammatory local reactions to bacterial proteins and house dust. We made a new vaccine from cultures from each side of the nose and throat and sputum. The cultures contained Staphylococcus albus and aureus and Streptococcus non-hemiliticus. The left nostril contained a predominance of colon bacillus. Cultures were all mixed together in one vaccine. Patient was treated with this

[1]Sterling, Alexander: Toxic Effect of Bacillus Pyocyaneus Vaccine. M.Rec., Sept. 1947.

vaccine and also a stock vaccine containing all the bacteria to which he gave a positive reaction and with a stock dust extract as a nonspecific factor. His improvement was irregular. Recurring attacks of asthma would follow pharyngitis and nasal obstruction. It was apparent, at this time, that a bacterial allergy was the main etiologic factor initiating nasal obstruction and pharyngitis.

He had electrocauterization of his nasal turbinates in 1946 and 1947 by a nose and throat specialist. This was followed in 1950 by sclerosing (Silnosal) treatment of the turbinates with no improvement. Rubber tubing of a French catheter No. 18, was inserted in each nostril. It was held together in front of nose by a safety pin. It gave him some breathing relief at night but proved uncomfortable and had to be discontinued.

In October 1951 he had a polypectomy. Several months later he had another sclerosing treatment of the turbinates. Nasal obstruction and pharyngitis would still recur leading to attacks of asthma.

Streptomycin had to be eliminated because he had some disturbance with his hearing. A sensitivity test was made for the following antibiotics: Penicillin, Aureomycin, Terramycin and Chloromycitin. He showed sensitivity to Penicillin. From then on courses of daily injections of Penicillin (300,000 units) were given. After 6 or 8 injections he would make a satisfactory recovery and remain well from 2 to 4 weeks.

Search was made for other etiologic factors in addition to bacterial allergy. He was asked to observe, during his well periods, the moment when the attacks would occur and come to the office for analysis. He reported the following: Not having any home he had to eat in restaurants. When he visited a restaurant at times he would have an attack of bronchial asthma lasting from 1 to 2 hours. Food was suspected. He was re-tested for foods and had no positive reactions. Elimination and substitution of various foods were resorted to with no improvement. It was then suspected that his trouble was possibly due to fumes and odors from cooking. Was advised to go to the same restaurants but *eat nothing* and remain there for the same length of time it usually took to have a meal. After this trial test he still had occasionally the same attacks of bronchial asthma, lasting for an hour or two, even after leaving the restaurant.

Was asked to notice any other fumes to which he might come in

contact in his home and outside environment. He reported that when attending a movie, if he sat near anyone wearing clothes recently removed from storage (saturated with insecticides), he would invariably be seized with an attack of asthma. Also when opening the clothes closets in his room, which also contained books, he suffered repeated attacks.

We had a new etiologic factor to be concerned about, namely, his state of sensitivity to fumes, odors and insecticides. After being free from attacks for several weeks, he unfolded a large billboard sign in his office in order to procure the names of actors and actresses. He was immediately seized with an attack of nasal obstruction and bronchial asthma.

After this episode he recalled that asthma would follow while handling fresh lithographic work, such as newspapers and magazines, when he obtained information for his newspaper and radio programs. At night, while in bed, he would read all kinds of fresh, printed matter. In other words he was highly sensitive to printers' ink, glue or sizing material. This accounted for his attacks during the night while at home as well as in the daytime in his office. A trial vacation of one week or more was suggested. At the shore he was perfectly free from nasal obstruction and asthma.

An extract was made from fresh lithographic and newspaper material and printers' ink, including sizing material for desensitization purposes, but it proved unsuccessful. He was advised to give up his position and change his living quarters. He renovated his room, cleaned out the closets, removed all camphorized materials, but was unable to find any other employment and had to retain his present position. Specific and symptomatic treatment produced some improvement. Recurring attacks of pharyngitis, nasal obstruction and asthma would be relieved after six or eight daily injections of Penicillin. Improvement would last from two to four weeks.

In April 1951 he had a recurrence of his respiratory infection. A course of Penicillin, the 10th up to date, was begun. After the 3rd injection, which was approximately the 64th Penicillin injection, he sustained a severe anaphylactic shock. It was with difficulty that he was placed on the table. He had itching all over the body, face and hands turned red, lips—blue, severe chest and pre-

cordial pains, dyspnea and orthopnea. Intradermal injections of 2 mms. of Epinephrin HCl (1:1000) were immediately given every two minutes. In all he had 10 mms. of Epinephrin. It was 24 minutes before he came out of shock. Since then we had to resort to other antibiotics to combat his respiratory infections.

In addition to the above respiratory symptoms he was having other complications which interferred with the favorable progress of his condition.

1. Recurring attacks of sharp precordial pain, arrythmia, palpitation, tachycardia 140-150 per minute. Electrocardiogram registered misbeats and paroxysmal tachycardia, otherwise normal.
2. Irregular attacks of muscular and joint rheumatic pains.
3. Gastro-intestional distention similar to postoperative ileus.

The above episodes required a constant changing of therapeutic measures. He always experienced sensitivity or intolerance to many drugs. Futhermore, specific and nonspecific drugs, which would relieve some symptoms, would aggravate others.

The patient realized now, since he had to discontinue Penicillin on which he relied so much, that he had to give up his reporter's position. The importance of avoiding all contact with fresh newspapers, magazines and other lithographic material was explained to him. He managed to obtain other employment as a secretary and public relations manager in a private fraternal organization. Since this change, for the last year and a half, he made almost a complete recovery. He gained in weight. When attacks did recur they were easily controlled.

SUMMARY AND CONCLUSIONS

This patient had mutiple states of sensitivity which did not reveal themselves until two or three years of constant observation and study: 1. Bacterial allergy. 2. Sensitivity to fumes, odors and insecticides. 3. Sensitivity to printers' ink, glue and sizing material.

It was apparent that all these states of sensitivity were synergistic to produce the characteristic symptoms encountered.

Fundamentally, as soon as he gave up his reporter's position, i.e., his contact with lithographic material and printers' ink, he made a spectacular improvement.

711 *Central Medical Building.*

THE EXCRETION OF METHIONINE IN CHILDREN IN HEALTH AND DISEASE

With a Note on the Value of Methionine Tolerance Test as an Index of Liver Function

A. Shafik Abbasy*, M.B., D. Ch., M.D.

and

E. A. Eisa**, M.Sc., Ph.D.

Alexandria, Egypt

The liver is the largest most metabolically complex organ in the body. During the last decade hepatic physiology has come to be viewed as the key of understanding of liver diseases; but the liver possesses such enormous physiological reserve capacity that minor, or even major, disturbances within it may only cause vague symptoms felt by the body as a whole and reflected on the countenance and behaviour and not related to the liver itself[20].

During the last few years, the role played by nutrition jumped to the front. Today, no nutritional process may be considered without simultaneous consideration of the liver. The metabolism and storage of food stuffs, hormones and enzymes and their by-products by the parenchymal cells, as well as the release of these substances according to the needs of the body, are the most important aspects of liver activity[9]. On the other hand, both degeneration and regeneration of liver parenchyma are closely related to the availability of utilizable nutrients to the hepatic cells. Thus, the pathology of liver disease is intimately related to the nutritional and circulatory status of the liver parenchyma[14].

Of major importance is the protein status of the liver[11]. If the protein reserves are low, the liver responds to a pathogen by parenchymal degeneration that varies from mild, to severe, to sudden and massive necrosis if there is tendency towards specific deficiencies[19]. Recently, this role of protein protection against liver damage and its reparative processes has received much attention[10, 17]. The beneficial action of proteins depends largely on the amino-acids they make available to the liver. Earlier experimental studies have shown the value of the amino-acid methionine

* Professor of Pediatrics, Faculty of Medicine, Alexandria University.

** Assistant Professor of Biological Chemistry, Faculty of Science, Alexandria University.

in protecting against the development of fatty liver which is the commonest metabolic disorder of the liver[8, 12].

The aim of this work is:

Part I

(1) To try to find out standards of methionine excretion in urine of normal children.
(2) To detect any variations in these standards in the different age groups.
(3) To compare these standards with those already published for normal adults, using the same fundamentals and techniques of the test.
(4) To try to work out a methionine tolerance test for normal children.

Part II

(1) To find out the levels of methionine excretion in urine in various pathological conditions.
(2) To try to detect any correlation between the level of excretion of methionine in urine and the progress of a disease.
(3) To evaluate the methionine tolerance as a test for liver function.

Biochemistry of Methionine. Methionine plays an important metabolic function in connection with the process known as transmethylation which indicates that methyl groups may be transferred from this amino-acid to other compounds such as ethanolamine to form choline in the body. Choline presumably acts through production of phospholipids[4, 5], which then can be either utilized in the liver or mobilized and transported to various parts of the body, thus avoiding accumulation of neutral fat in the liver and so protecting it from fatty infiltration[12, 16]. Inosital is needed in this process as a constituent part of phospholipids[3]. Because the human and animal body is incapable of synthetizing methyl groups required for such mentioned reaction, these may be regarded as a nutritional essential having the same importance as vitamins or indispensable amino-acids. Choline and betaine share methionine in carrying these labile methyl groups and together with inosital are termed lipotropic factors. This action was demonstrated experimentally and clinically by using radio-phosphorus by Cayer and Cornatzer[7]. Besides its importance in

transmethylation and as a lipotropic factor, methionine can supply all the suffer requirements of the body, since it is readily converted into cystine in the tissues through its demethylation and condensation with serine[14].

Method of Estimation of Methionine. The method used is that of Hess and Sullivan[13] which is: To 5 cc. of the solution to be tested add 1 cc. of 5 N. NaOH and 1 cc. of 1.0 per cent aqueous solution of glycine and 0.2 cc. of 10.0 per cent aqueous solution of sodium nitroprusside. Keep the solution at 35° C. for 10 minutes and then chill in an ice bath, and add 2.5 cc. of 20 per cent HCl to it. After being shaken for several minutes, the solution is ready for colorimetric reading. Match it against a standard solution of methionine similarly treated. This reaction is sensitive to 50 parts per million in Dubosq colorimeter, but we used one of the well-known photo-cell electric colorimeters to avoid any visual error.

PART I

NORMAL CASES.

Criteria of Normality.

(1) A weight less than 15 per cent deviation from the average normal weight for age.
(2) No present or past liver disease.
(3) Absence of organic diseases and manifestations of nutritional deficiencies.
(4) Absence of gastro-intestinal disorders for at least two months, to assure good digestive and absorptive functions.
(5) A diet common to each age group so that the results might be comparable.

Source of Cases.

The normal cases examined were 97. These constituted four age groups:

Group I. Age 2 to 5 years; number of children 21, eight of them were males and thirteen females. They were chosen from the foundlings supervised by Alexandria University Children's Hospital and from the child welfare centre attached to the hospital.

Group II. Age 5 to 10 years; number of cases 18, males equal females. Some of these were cases of quiescent rheumatic heart disease kept in the hospital long enough to assure a period of

convalescence. The rest were healthy children from Alexandria Child Welfare Institute receiving a diet almost similar to the hospital diet of the same age group.

Group III. Age 10 to 15 years, number of cases 28. All of them were healthy children from Alexandria Child Welfare Institute.

Group IV. Thirty adolescent and adult cases above 15 years. All of them were healthy mothers who accompanied their sick babies on their admission to the hospital.

Procedure. Each subject examined was kept on the same diet he was consuming without any change. The intake of water and fluids was neither restricted nor encouraged. The 24 hours urine was collected in a closed flask which contained a few drops of formalin as a preservative. The urine collected was measured, mixed well, and a sample was taken for the quantitative estimation of methionine as described above.

Results

Group I. The methionine excretion per 100 cc. of urine varied between 5 and 16 mgms., with an average of 9.5 mgm. per 100 cc. The total methionine excretion in the 24 hours varied between 24 and 45 mgms., with an average of 33 mgms.

Group II. Methionine excretion per 100 cc. of urine varied between 8-18.4 mgms. with an average of 17 mgms., while the total 24 hours excretion varied from 56 to 82.6 mgms. with an average of 61.5 mgms.

Group III. The range of methionine excretion per 100 cc. was from 10.2 to 26 mgms., the average of which is 21.1 mgms. The total methionine excretion per 24 hours varied from 72 to 180 mgms. with an average of 131 mgms.

Group IV. Showed a range of methionine excretion per 100 cc. between 16-40 mgms. with an average of 27 mgms, while that of the 24 hours ranged between 160 and 400 mgms. with 291.4 mgms. being the average. The results of the four groups of normals are summarized in Table 1.

During the work, it was observed that sometimes the daily excretion of urine varied widely from case to case, not only in different age groups but also in the same age group and occasionally in the same child on different days. To investigate the existance of any relation between the volume of urine and the amount

of methionine excreted in the 24 hours, the following experiment was done:

TABLE 1

Age Group in Years	No. of Cases	Mgms. Methionine per 100 cc. Urine			Mgms. Methionine per 24 Hours Urine		
		min.	max.	average	min.	max.	average
2-5	21	5	16	9.5	25	40	33
5-10	18	8	18.4	17	56	82.6	61.5
10-15	28	10.5	36	21.1	72	180	131
15-50	30	16	40	27	160	400	291.4

Two children and an adult were continued on their regular diet; and methionine was estimated as usual. Next day they were given the same diet but the amount of water consumed was restricted as far as possible, and on the third day, while still on the same diet, they were encouraged to drink much water. The results obtained are given in Table 2 showing that the change in the volume of urine can markedly affect the concentration of methionine, but not its total amount excreted in the 24 hours.

TABLE 2

Daily Water Intake	Case 1 Age 6 Years			Case 2 Age 12 Years			Case 3 Age 30 Years		
	cc. Urine/ day	Meth. exc. /100 cc.	/day	cc. Urine/ day	Meth. exc. /100 cc.	/day	cc. Urine/ day	Meth. exc. /100 cc.	/day
Regular	700	8	56	900	13.5	121	1050	26.7	280
Restricted	400	15	60	630	18.3	115	680	45.6	310
Plenty	1100	4.5	49.5	1240	11.3	141.8	1280	20.7	265

Methionine Tolerance Test. Having obtained the previous results, and knowing that amino-acid tolerance test was tried in adults and that the methionine and tyrosine tests are the more sensitive and promising ones, a trial of the methionine tolerance test in children was found advisable. For this purpose the diet of the cases tested was kept essentially constant. A load dose of methionine equal to 50 mgms. per Kg. body weight was introduced orally on an empty stomach to provoke alimentary hypermethioninemia and hypermethioninuria. But difficulties were faced by children refusing to ingest the dose either partly or completely and by others who vomited after taking it. Therefore, the oral administration was replaced by the intravenous route, injecting the same dose slowly as a 5 per cent aqueous solution. The blad-

der was completely evacuated just before the injection and then at intervals of three hours for the next nine hours. In each of the four samples, the methionine content per 100 cc. of urine was estimated and the results plotted in a curve. The ideal method of estimating the methionine tolerance curve in plasma by drawing four or more samples of blood at short intervals proved to be almost impossible in children, and so, while the test was made on urine, the advantage of introducing the test dose intravenously and so eliminating the intestinal absorption factor was made use of.

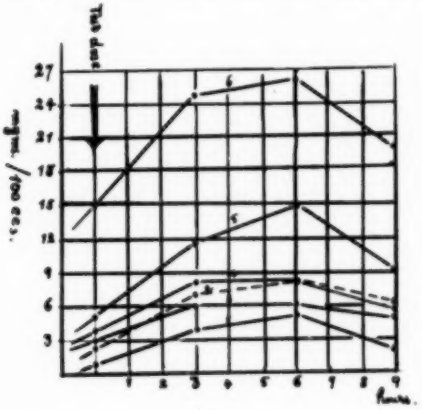


Fig. 1.

The results of the six cases examined are shown in Fig. 1 and in Table 3.

TABLE 3

No. of Cases	Meth. in Mgms.	Mgms. Methionine per 100 cc. Urine				Total Meth. Excr. in the 9 hrs.	Its % from the test dose
		Before	1st three	2nd three	3rd three		
1	500	1	4	5	3	8.1	1.6 mgm%
2	500	2.3	7	8	6	8.9	1.7 "
3	400	3	6	6	5	5.8	1.45 "
4	1300	4	8	7	5.8	13.8	1.1 "
5	800	5	11.8	15	9	22.4	2.8 "
6	2000	15	25	26	21	43	2.15 "

SUMMARY AND DISCUSSION

(1) The role and importance of methionine in nutrition in general and in protection and nutrition of the liver parenchyma in particular was discussed.

(2) The biochemistry of methionine and its mode of action in the body, as well as the method of its estimation, were briefly described.

(3) Standards and ranges of methionine excretion in urine of healthy children at different ages were determined as well as those of healthy adults.

(4) The amount of methionine excretion per 24 hours was found to be fairly constant for the same person irrespective of the variations of the 24 hours volume of urine.

(5) No difference was noticed between males and females.

(6) A methionine tolerance test in children was established by giving an intravenous test dose of methionine and then collecting the urine at three hourly intervals and estimating its methionine content per 100 cc. and calculating the total excretion during the 9 hours following the administration of the test dose.

(7) The results obtained in the different age groups appeared to be directly related to the age, i.e., the younger the child, the less methionine is eliminated in his urine and vise versa. The average excretion of methionine per 24 hours was 33 mgms. for the age group 2 to 5 years, 61.5 mgms. for the age group 5 to 10 years, 131 mgms. for the age group 10 to 15 years and 291.4 mgms. for the age group 15-50 years. Comparing the results obtained in adults with those of other workers (Albanese et al.[1]), we find that the total methionine excretion per 24 hours is comparable, being 160 to 400 mgms. in this series and 200 to 400 mgms. and 247 to 494 mgms. in the other series.

As to the results obtained for methionine excretion in children, these have not been studied before.

(8) The results of the methionine tolerance test were more or less comparable (Fig. 1). After the test dose was injected intravenously, the excretion rose gradually forming a plateau with its high level from the third to the sixth hours and then it declined steadily to approach the fasting level after nine hours. The amount of methionine excreted during the nine hours period of the test was found to be very small, amounting from 1 to 2.8 per cent of the injected dose, the greatest part having been retained by the liver as there is no kidney threshold for methionine to keep it in the blood.

PART II

PATHOLOGICAL CASES.

This part of the work which deals with pathologic conditions should be considered as a preliminary report, because, although the total number of cases is not small, being 40, yet the number of cases in each of the seven groups of diseases is not enough. Therefore, more cases should be examined to arrive at a final conclusion and other pathological conditions should also be investigated. Another paper will be published in time.

However, when we analyze the investigated cases (see Table 4), certain facts and sometimes conclusions can be drawn regarding methionine excretion in some groups of diseases.

Results. It should be noted that the case is not to be considered abnormal unless it deviates much from the average for the normal of the corresponding age group because the ranges for the normals are rather wide. Again, in comparison, the total excretion per 24 hours is the one to be considered only because it is fairly constant as mentioned above.

The results obtained are summarized in Table 4.

TABLE 4

Disease	Age in Years	Mgms. Methionine Excretion per 24 Hours	Normal Standards		Deviation from Normals
		Case	Range	Average	
Hepatitis with jaundice	3	77	25-40	33	much increased
	5	92	" "	"	much increased
	6	96	56-82	61.5	increased
	6.5	84	" "	"	slight increase
	7	68	" "	"	nil
	11	140	72-180	131	nil
Hepatomegaly	4	28	25-40	33	nil
	4	49	" "	"	slight increase
	5.5	61	56-82	61.5	nil
	7	40	" "	"	slight decrease
	8	36	" "	"	decreased
Acute nephritis	3	30	25-40	33	nil
	3.5	26.5	" "	"	nil
	4	24	" "	"	nil
	5	42	" "	"	nil
Subacute nephritis	2	12.5	25-40	33	decrease
	25	36	" "	"	nil
	4	40	" "	"	nil
Subacute endocarditis	5	84	25-40	33	much increased
	9	45.5	56-82	61.5	decreased
	10	65	" "	"	nil
	11	132	72-180	131	nil
	12	58	" "	"	decreased
Acute bacterial pneumonias	4	66	25-40	33	much increase
	4	72	" "	"	much increase
	4	132	" "	"	much increase
	4.5	90	" "	"	much increase
	8	96	72-180	61.5	increased

Tuberculous	2	72	25-40	33	much increased
peritonitis	2	64	" "	"	much increased
adenitis and	3	63.5	" "	"	much increased
pleural effusion	4	36	" "	"	nil
	4	24	25-40	33	nil
	5	66	" "	"	much increased
	5	16	" "	"	nil
	6	62	56-82	61.5	nil
	7	45	" "	"	nil
	7	40	" "	"	nil
	7	45	" "	"	nil
	12	180	72-180	131	nil

Some of the cases which gave high methionine excretion were followed at suitable intervals till their complete cure. In Table 5 the results of two cases of jaundice (No. 1 and 2, Table 4), and two cases of acute bacterial pneumonia (No. 1 and 3) are detailed:

TABLE 5

	Jaundice I		Jaundice II		Pneum. I		Pneum. III	
	Meth./ 100 cc.	Meth./ 24 hrs.	Meth./ 100 cc.	Meth./ day	Meth./ 100 cc.	Meth./ day	Meth./ 100 cc.	Meth./ day
Test No. 1....	22	77	20	92	30	66	44	132
Test No. 2....	14	60	21.3	80	25	73	40	116
Test No. 3....	12	43.5	17	64	8	42	18	82
Test No. 4....	8	38	12	51.5	..	..	12	48
Test No. 5....	11	30	12	40	..	..	11	50

For the three cases of jaundice (1 to 3 in Table 4), tolerance tests and curves were made and the results are represented in Fig. 2 and in Table 6.

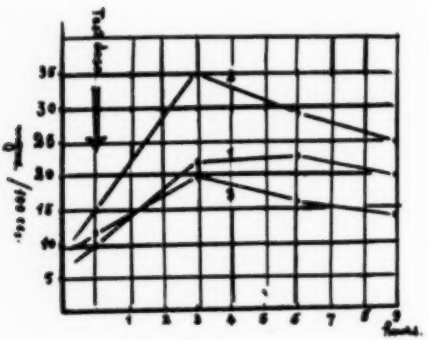


Fig. 2.

TABLE 6

Case	Mgms. Meth. injected	Mgms. per 100 cc. Methionine in Urine Before dose	0 3 hrs.	3 6 hrs.	6 9 hrs.	Total Meth. Excreted in the 9 hrs.	Percentage of the excreted Meth. from the dose
1	500	10	22	23	20	83.5	16.1%
2	800	15	35	28	25	174	21.8%
3	1000	12	20	16	14	92	9.2%

Analysis of Results. Hepatitis with Jaundice: Of the six cases examined, three were within normal limits, one gave moderately increased methionine excretion per 24 hours, while the other two were definitely high. It was observed that the last mentioned three cases were the most severe and long standing among the whole lot. Similar results were reported in adults by Homburger[15], and by Platow and Nadler[18], who also stated that short standing jaundice may cause no liver dysfunction. On the other hand, Astrup[3] found no change in methionine excretion in all his cases of hepatitis. Methionine tolerance test was done for both severe cases of jaundice as well as the mild one. As seen in Fig. 2, the peak of excretion was higher than normal, the plateau wider and the level remained still high at the end of the nine hours of the test. The amount of methionine eliminated during the nine hours varied from 9.2 to 21.8 per cent of the injected dose, which, compared to the normal, is very high (Table 3). This also agrees with results obtained in adults where significant delay in the clearance of injected dose is claimed in liver disease.

Two of these three cases were re-examined at intervals of about a week and it was found that the total daily elimination of methionine gradually returned to normal (Table 5).

Acute Pneumonia: Of the five cases examined, one only was near the normal range, while the rest gave definitely increased excretion. When two of these cases were followed at 48 hour intervals, it was found that the level rapidly fell down with the disappearance of temperature or with hydration, but it remained somewhat high. This may suggest an endogenous source of methionine probably autolyzed consolidated pneumonic material. Bradley reported hepatocellular dysfunction during any high fever[6].

Mild Tuberculous Affections: Out of twelve cases of tuberculous peritonitis, adenitis and pleural effusions, only four showed

mild to moderate methionine excretion in urine (Table 4). Again, this may be due to breaking down of tissues in such a disease, as pyrexia was minimal in this group.

The other four groups investigated gave apparently normal results (Table 4).

SUMMARY AND CONCLUSION

(1) Forty pathologic cases constituting seven disease groups were examined for methionine elimination in urine per 24 hours and the results compared with the ranges for normals of the corresponding age group. Three of these groups, i.e., hepatitis with jaundice, acute pneumonia and mild tuberculosis, showed abnormally high excretion.

(2) Increased urinary methionine excretion was a constant finding in cases of manifest and severe liver dysfunction, but not in mild cases or in cases of simple enlargement of liver.

(3) Four of the cases, with definitely high total excretion, were re-examined periodically till they returned to the normal range. Such a procedure proved a reliable measure to evaluate the progress of the case, thus serving as an index of liver function.

(4) Three cases of hepatitis with jaundice were given test doses, and tolerance curves were plotted (Fig. 2). Compared with the normal curves they showed: (a) Change of pattern indicative of liver impairment. (b) High percentage of elimination of the injected dose that varied from 9.2 to 21.8 per cent as compared with 1 to 2.8 per cent in normal cases (Tables 3 and 6). Beattie et al.[3] noted impaired methionine tolerance in adults with protein depletion and associated hepatic insufficiency.

REFERENCES

1. Albanese, A. A.; Frankston, J. E. and Irby, V.: J. Biol. Chem., 156, 293.
2. Astrup, P.: Acta med. Scandinav., 130 12, 1948.
3. Beattie, R.: Wien med. Wchnschr., 56, 20, 1906.
4. Best, C. H.: Diabetes and Insulin and the Lipotropic Factors, 1945.
5. Best, C. H.; Hartraft, W. S. and Lucas, C. C.: Brit. M. J., 2, 1001, Nov. 5, 1949.
6. Bradley, S. E.: New England J. Med., 240-256, 1949.
7. Cayer, D. and Cornatzer, W. E.: South. M. J., 42: 669, Aug. 1949.
8. Folch, J. and Woolly, D. W.: J. Biol. Chem., 142: 963, Feb. 1942.
9. Forsgren, E.: Klin. Wchnschr., 8: 1110, June 11, 1929.
10. Goldschmidt, S.; Vars, H. M. and Ravdin, I. S.: J. Clin. Investigation, 18:277, 1939.
11. Gyorgy, P. and Goldblatt, H.: J. Exper. Med., 89, 245, Feb. 1949.
12. Gyorgy, P.: Am. J. Clin. Path., 14, 67, Feb. 1944.
13. Hess and Sullivan: J. Biol. Chem., 151, 635 1943.
14. Himsworth, H. P.: The Liver and its Diseases, 1947.
15. Homburger, F.: Am. J. Med. Sc., 212, 68, 1946.
16. Jaffy, E. R.; Beneditt, E. P.; Humphreys, E. M. and Wissler, R. W.: Arch. Path., 47: 411, May 1949.
17. Miller, L. L. and Whipple, G. H.: Am. J. Med. Sc., 109: 204, 1896.
18. Platow, R. V. and Nadler, S. B.: Journal-Lancet, 65: 186, May 1945.
19. Wallerstein, R. S. and Walker, W.: Ann. Int. Med., 31: 904, Nov. 1949.
20. Watson, C. J.: Ann. Int. Med., 31: 405, Sept. 1949.

OBITUARY

OSCAR MENDERSON SCHLOSS, M.D.
1882-1952

Oscar Menderson Schloss died in his sleep on Oct. 13, 1952 in his seventieth year. Dr. Schloss was born in Cincinnati, but received much of his early education in Alabama. He graduated from Alabama Polyclinic Institute and received his medical degree from Johns Hopkins in 1905. After three years of hospital training in New York City (at Kings County and at the New York Nursery and Child's Hospital) he returned to the South and opened up an office for the practice of pediatrics in Columbus, Georgia. This venture lasted for one month only, after which he returned to New York, entering practice there and becoming affiliated with the New York Nursery and Child's Hospital in West 59th Street with a teaching appointment on the staff of University and Bellevue Medical College.

Dr. Schloss's curiosity and interest in studying disease were apparent very early in his career. Despite the demands of a growing practice and the lack of laboratory facilities at the Nursery and Child's Hospital he made contacts with a number of workers in the preclinical sciences at the nearby P. and S. and was given space to work in the biochemical laboratory of Dr. W. J. Gies. During the ensuing years he carried out, almost single handed, meticulous chemical studies dealing with the nitrogen, phosphorus and purine metabolism of newborn infants. His interest in allergy dates also from this period.

In the course of studying an infant with extreme hypersensitivity to milk he was led to undertake a detailed fractionation and purification of milk proteins and also to the use of specific immunological techniques. His reports of this work are models of clear thinking and exposition. This work attracted the attention of Dr. Holt, Sr., and in 1912 Schloss was given an appointment in pediatrics on the Columbia staff and for the greater part of the next six years his activities were centered at Bellevue Hospital. The outstanding achievement of this period was the demonstration —by a variety of techniques—of the presence of acidosis in infantile diarrhea. His work was completed and submitted for publication when he learned that his predecessor at Bellevue, John Howland,

who was then in Baltimore, had, with Marriott, made entirely similar observations. With characteristic modesty Schloss deferred his own report, ceding any claim to priority. It was, as Park has expressed it, "an act of courtesy from a younger to an older man which deserves unstinted praise."

In 1918 Schloss was appointed professor of pediatrics at Cornell Medical College and transferred his activities back to the Nursery and Child's Hospital where he began to build up a scientifically minded pediatric department. A broader opportunity came in 1921 when he accepted the professorship at Harvard and became pediatrician-in-chief to the Children's Hospital. For Boston pediatrics this represented a new era—the era of clinical investigation—as opposed to the authoritarian dogmatism that had prevailed. Gamble came from Baltimore to join the staff at the Children's Hospital to continue and to expand the work now so well known. Anderson and Stuart were active in immunological studies and at the Boston City Hospital, where the pediatric service was at that time under the aegis of Harvard, Darrow and Buckman carried out fundamental studies of respiratory metabolism. The department flourished scientifically, but for conservative Boston the new era was in some respects premature and was not generally appreciated. Difficulties arose and when, after two years, Schloss was invited back to Cornell and to the Nursery and Child's Hospital where he had many well wishers, he accepted and returned to New York. The ice in Boston had, however, been broken and the subsequent task of carrying on, which fell to Kenneth Blackfan, was a far easier one in consequence.

In the decade that followed, the department of pediatrics at Cornell became a preeminent one. Well equipped laboratories were installed in the old Nursery and Child's Hospital and funds were obtained for full time workers. The studies of respiratory metabolism carried on in an infant calorimeter for many years by Levine and his collaborators date from this period. Distinguished work was done on the absorption of unsplit protein; on the development of antibodies after first contact with food without concomitant allergic symptoms; on passive transfer of antibody. The first studies of renal clearance in newborn infants were carried out by Schönthal, and pediatric hematology was developed under Carl Smith. This decade saw the development of the new

Cornell-New York Hospital Medical Center of which the Nursery and Child's Hospital became an integral part.

The depression years brought heavy administrative problems for which Schloss had little appetite. In 1933 he resigned his position as chairman of the department, and, although he continued to participate actively in the teaching and clinical work at the New York Hospital, his major time was devoted to private practice. He became the leading pediatric consultant in New York City. About a year before his death he moved to Southold, Long Island, where he had a summer home, continuing to practice to a limited extent in that community.

Dr. Schloss exercised a profound influence in American pediatrics. Although some of his most promising pupils—Buckman, Schönthal and Hoag—died young, no less than seven others have since become professors of pediatrics (Gamble, Darrow, Levine, Gordon, Weymuller, Wyatt and Chown). Many others have had outstanding careers in pediatrics and in preclinical fields.

Schloss belonged to various scientific organizations(American Pediatric Society, Society for Pediatric Research, American Academy of Pediatrics, American Society for Clinical Investigation, Society for Experimental Biology and Medicine, American Society for Serology and Hematology) and to several informal groups. He was a Harvey lecturer in 1925; he served as president of the American Pediatric Society in 1932 and in the same year as president of the Congress of American Physicians. However, he rarely attended large meetings, preferring smaller and more intimate gatherings.

He is survived by his wife, the former Rowena Farmer and by one son, Oscar M. Schloss, Jr.

Oscar Schloss was a very unique person. Unsurpassed as a clinician he nevertheless found the time to master two preclinical disciplines—biochemistry and immunology—and brought both to focus on the problems of pediatrics. He was a somewhat shy, exceedingly modest man with nothing of the showman about him. But his thoughts were so clearly and succinctly expressed and his intelligence and wisdom so obvious that they carried conviction without the need of the dramatic arts. If his intellectual stature made him universally admired, his human sympathy and his never failing gentle humor made him universally loved and an ever delightful companion. It will be a long time before we look upon his like again.

L. EMMETT HOLT, JR.

PEDIATRICS AT THE TURN OF THE CENTURY

From time to time the Archives, which was the first Children's Journal in the English language, will reprint contributions by the pioneers of the specialty over fifty years ago. It is believed that our readers will be interested in reviewing such early pediatric thought.

THE ETHERIZATION OF CHILDREN*

WALTER G. ELMER, M.D.
Philadelphia.

The administration of anesthetics to children is an art which requires an unusual degree of skill and tact on the part of the anesthetizer, and the greatest care must be exercised to prevent the overdosing of the little patient, with the resulting increased shock and lowered vitality. Children are very susceptible to anesthetics, and it is not an infrequent occurrence to see a child change suddenly from a condition of safety to one of danger from the addition of a single drop of chloroform or twenty or thirty drops of ether.

As the title indicates, this paper deals only with the administration of ether to children—for the writer believes that ether is the safest and best of the anesthetics for young subjects and has the least objectionable features—provided it is given properly. Our experience with medical students is that, when first called upon to give ether to a patient, their idea is to pour ether on a cone or gauze at frequent intervals, and, having the patient completely unconscious and relaxed, to continue this pouring on of ether at intervals of about thirty seconds until the surgeon has completed his work. It is difficult to impress upon the student's mind that quite long intervals may be allowed to pass without the addition of a single drop of the anesthetic, and yet the balance be so carefully maintained that the patient will remain completely relaxed throughout; and, furthermore, while still on the operating table and the dressings being applied, will already show signs of coming out of the anesthetic.

The degree of shock to the nerve centres by a prolonged etherization is very considerable, even when the ether is properly admin-

*Reprinted from ARCHIVES OF PEDIATRICS, 22:454-465, June 1905.

istred; and when too much is given and the patient so completely depressed that he shows no signs of returning consciousness for an hour or even longer after the completion of the operation, the depression and shock may be so great that it may actually be a determining factor in the life or death of the patient.

The vitality of children is very easily lowered; their bodies are often slight and frail and wasted by disease, as in those cases of prolonged suppuration in the hip joint, or spinal caries. It is in these instances that every precaution must be taken to conserve the bodily heat and energy.

There are but few occasions in which ether is not to be given in preference to other anesthetics. The most important of these is an abnormal state of the respiratory organs themselves. It would be a safe rule to follow never to give ether to children during an acute bronchitis, pulmonary congestion—however slight it may be—or pneumonia. The danger of pulmonary edema, or a rapidly fatal pneumonia must always be considered in these cases, and only in those of great emergency would it be warrantable to etherize these patients, and even with other anesthetics the danger is very considerable. The writer recalls at the present moment several cases among intimate personal friends who were well enough to walk into a hospital for operative treatment, which was considered in no way dangerous, and who died of pulmonary complications which resulted undoubtedly from the anesthetic. It is these unfortunate accidents which are deplorable, and which must be guarded against at no matter what inconvenience or delay. It should be a rule, that all such operations upon children as the removal of tonsils or adenoids, an internal operation for appendicitis, osteotomy or tenotomy, cleft-palate and hare-lip, excision of the hip, hernia, and others of like character, in which there are diffuse râles throughout the chest, cough, hoarseness or loss of voice, congestion of a lobe, with slight rise in temperature, any or all of these symptoms should cause the operation to be deferred to a more favorable time. Twenty patients might bear the anesthetic well and apparently suffer no ill consequences; and yet, on the other hand, any one of the series might die, and remain as an everlasting reproach to the better judgment of the operator or his anesthetizer. It is unnecessary to add that in emergency operations, such as a virulent appendicitis, strangulated hernia, intestinal

obstruction, perforation in typhoid fever, and other like conditions, operation must be performed at once, no matter what the risk; and under the conditions which we have enumerated, chloroform would be the anesthetic of choice; and for short operations chlorid of ethyl as a general anesthetic will no doubt prove of great value. It should be mentioned that children suffering from adenoids not infrequently have a slight cough, which is due entirely to the accompanying catarrhal condition of the upper air passages. In these cases the removal of the growths is, of course, distinctly indicated, and the writer has never seen any bad results from the use of a general anesthetic.

In regard to nephritis, ether, if it is properly administered and not given in overdose, need not be considered an anesthetic of unusual danger; and it is not unreasonable to suppose that the custom, which prevailed much more a few years ago than it does at the present time, of depriving abdominal cases of water for twelve or twenty-four hours or longer after operation, has been responsible for a considerable number of the cases of uremia, especially those in which there had been a slight pre-existent nephritis. Water should be given in small quantities as soon after the operation as possible; that is, as soon as the irritability of the stomach subsides, and then given at frequent intervals in increasing quantity. Ether should not, of course, be administered to patients with nephritis when it can be avoided; but when an anesthetic is absolutely necessary ether may be given.

In etherizing a patient with heart disease constant watchfulness is necessary. With the exception of cases of extreme or grave cardiac conditions, however, these patients can be brought safely through the anesthesia without any unfavorable symptoms.

Cases of profound anemia are always a source of anxiety—they are much more susceptible to shock, and the anesthetic increases the depletion of the blood. Where the hemoglobin is at 35 per cent, or below, the anesthesia must be of the shortest possible duration and ether used most sparingly: and even so the danger to life is very great.

In the bad accident cases which are brought into the hospital, children crushed by trolley cars, or in railway accidents, ether may be given, and it is possible to perform a quick amputation of a crushed limb, or set a broken bone, without inducing a pro-

found anesthesia; and ether given in this way will act as a stimulant upon the circulatory organs. Prolonged or excessive ether will put such an additional depression upon the already existing shock that, as a result of the two combined, the patient may not survive.

The depth of the anesthesia in these cases is most important, for the patient must not be allowed to suffer unnecessary pain; this of itself will increase the shock. When, therefore, we find ourselves confronted by so difficult a problem, a child, perhaps, with a crushed limb requiring amputation high up in the thigh and in a condition of profound shock, the writer believes that the best chances for saving the patient's life will be obtained by inducing a light anesthesia with ether, blocking the great sciatic and the anterior crural nerves by a cocain injection a little above the point of intended division, and then doing as rapid an amputation as can be done with safety. There can be no doubt left in the minds of those who have followed closely the researches of Harvey Cushing and Crile that the division of great nerve trunks close to the spinal axis, whether the patient be lightly or deeply anesthetized, inflicts a sudden shock to the nerve centres, followed instantly by a fall of blood pressure; and this may be so decided a factor that it will turn the balance against the patient and a fatal termination be the result. The writer has observed this in amputation at the hip.

The most suitable time for operating upon children is in the morning, for at this time the child, if he is not apprehensive in regard to the operation, has been refreshed by his night's sleep and is not kept waiting through long, tedious hours for the arrival of his doctor at some hour in the afternoon. Children of ten or over not infrequently realize the true meaning of an operation and become somewhat nervous and anxious as they look forward to the appointed hour; but this never, so far as we have been able to observe, interferes with sound sleep, unless the child is kept awake by pain or the discomforts attending his condition.

The preparation of children for the operation and anesthetic does not differ materially from that of adults—the bowels should be thoroughly evacuated by a laxative given in the late afternoon of the previous day and the lower bowel washed out with an enema in the morning. Solid food should be absolutely forbidden on the

day of the operation. The writer has known children of fifteen years to vomit food—as soft boiled eggs, milk, toast, etc., etc., in the identical condition in which they were swallowed, six hours after the meal had been taken—the whole process of digestion having been arrested by the nervous condition of the patient. In consequence there was much annoyance and delay in anesthetizing these patients, and they rarely took the ether well. If an operation is fixed for eleven o'clock in the morning, a cup of broth may be given at seven, unless there is some definite reason for not doing so, and water may be given at the same time; but absolutely nothing in addition. The fluids are promptly absorbed from the stomach and four hours later the child should be in excellent condition for the anesthetic.

An absolutely pure ether should be used and that which is administered directly from the can is less irritating than ether which has been exposed to light and air for some time. A convenient method is to have at hand several of the small tins holding 3½ ounces each. By making two small perforations in the top the flow of ether can be perfectly regulated, or, if preferred, an ether bottle may be used. These are especially prepared for this purpose, but, as a rule, are no more satisfactory than an ordinary glass bottle having a cork which is notched on opposite sides, or placing a folded strip of gauze in the neck of the bottle allowing about an inch to project over the margin and then replacing the cork—this permits the ether to fall off the gauze by a continual dropping, the rapidity of which can be regulated by the thickness of the folded strip and the tightness with which the cork is inserted. In using the ether directly from the tin can, it will be found that by placing the index finger over the holes in the top and allowing the ether to trickle off the tip of the finger, the freedom of the flow can be readily regulated by the pressure of the finger.

Th open method of administration is the one which should be adopted always; that is, an abundance of fresh air should be allowed the patient. The various forms of closed apparatus which were modeled after the Clover pattern are now but seldom used. In fact, the principle upon which they depend seems unscientific, the patient breathing again and again his own expired air mixed with ether vapor, and succumbing as much to suffocation from accumulated excess of carbon dioxide as to the therapeutic action

of the ether itself. In order to lessen shock and preserve bodily heat and energy, the vital activity of the tissues should be kept up to its highest point, and for this purpose an abundance of oxygen is necessary, and this can best be supplied by pure, fresh air; and if this is permitted there will rarely be any occasion to give ether and oxygen in combination. The inhalers which are most satisfactory are either plain gauze, folded or cut into about twenty layers, and this may be conveniently clamped in a small wire frame which will make a hollow hemisphere of the gauze about the size and shape of a shallow teacup, or the Allis inhaler may be used. Senn's ether cone is very satisfactory—a wire frame for supporting a cone made from a towel folded over cardboard and left open at the top, where a loose piece of gauze or a sea-sponge is placed and the ether poured on from above. The writer prefers the Allis inhaler to all other types, and is much more familiar with its use. A small size should be ordered for children, for it must be only large enough to rest comfortably over the nose, mouth and chin without including the eyes of the patient, as is the case if the larger size is used on a child. The ether vapor if administered from a towel or other appliance which will cover the eyes will cause so much irritation of the conjunctivæ that they will become deeply congested and may cause the patient discomfort for a day or two following the operation. It is quite customary to cover the eyes of a patient with gauze or a folded towel in order to protect them from the ether fumes; but we prefer not to do this with children, as it is far more apt to frighten them than if the eyes are left free and a child is permitted to look about as he wishes; children become apprenhensive and distrustful when the eyes are covered and are much more apt to reach up and push the cone away. As a rule, if the eyes are uncovered they will gaze steadily up into the face of the anesthetizer until drowsiness overtakes them—the lids begin to droop and close, and the little patients sink quietly into unconsciousness.

For children, therefore, the smaller size of the Allis inhaler should be used; this should have a clean, folded towel pinned closely about it, which is permitted to extend about an inch below the lower margin of the cone. This will then fit snugly over the bridge of the nose, the cheeks and chin and leave the eyes entirely free, and at the same time prevent the escape of ether vapor into

them. The open end of the cone should always be allowed to remain free and unobstructed, admitting pure air without restraint, and never should it be necessary to cover the cone with the palm of the hand or a towel; this defeats entirely the principle upon which the inhaler is constructed, e.g., to allow the patient an unlimited amount of air, which is saturated more or less, according to the requirements of the moment, with ether vapor. When once in place the cone need not be removed throughout the entire operation, unless it be to remove accumulated mucus from the throat, or in case of accident.

In addition to the inhaler the anesthetizer should have at hand two or three sponge-holders with tufts of gauze clamped firmly in the ends, and before using these it is always well to test the grip of the sponge-holder upon the gauze before passing it back into the patient's throat. When these sponge-holders are clamped quickly on the gauze and handed to the anesthetizer by the nurse during the operation, the gauze may be so insecurely fastened that it may be lost in the patient's pharynx, causing no little delay and embarrassment. There will also be a tongue forceps, although this will scarcely ever be required during a well-conducted anesthesia; a hypodermic syringe, with tincture of digitalis, strychnia, atrophin, nitroglycerin and aromatic spirits of ammonia; some pieces of cut gauze and one or two towels. There should always be an extra can or two of ether within reach.

If the child is very much reduced from prolonged disease and the operation is apt to be a long and dangerous one, as an excision of the hip, every precaution must be taken to preserve the vital forces as much as possible, and the child's body should be entirely swathed in cotton batting, bound on comfortably with a bandage, except that part which must remain exposed for operation; or an electrotherm may be used on the operating table—a rubber mat which is heated by electric coils and can be raised to any desired temperature. It is covered by a sterile blanket or sheet and will keep the child warm throughout the operation. It becomes the duty of the anesthetizer to regulate the temperature by means of the electric switch. It should just be comfortably warm to the hand and never hot enough to produce sweating. It will be found a most valuable aid in saving animal heat. Under no circumstances should the child's body rest against the glass top of the

table. As a rule, it is better to anesthetize children in their own rooms and when unconscious carry them to the operating table in an adjoining room.

It is well to spend a minute or two in conversation with the little patient about his toys or playmates and, if he is old enough to understand, to explain to him that the operation which is about to be done is necessary to make him well; that without it he will not grow up to be strong and healthy as his playmates are. The child should be told that if he will be quite still and breathe through the ether cone a few times he will go quietly to sleep and will not feel any pain and will wake up again and find that everything is finished.

After a careful examination of the heart and lungs, and already knowing the condition of the kidneys and the blood (the latter only in case the child is anemic), having ascertained that the bladder is empty and that there is no loose object in the mouth, the ether and inhaler may be brought in and the child allowed to handle and examine the latter. If he holds it up before him he can see the light coming through between the folds of gauze bandage, and will then more easily appreciate that he can breathe easily through the inhaler. There should be no one in the room save the nurse and anesthetizer. It is far better not to have the parents present. The mother may be permitted to remain seated at the foot of the bed, or close at hand, provided she remain perfectly quiet. There should be no conversation in the room, no sound of a sudden or startling nature, as the slamming of a door; no one should speak to the child save the anesthetizer himself. Whoever has been present at the anesthetizing of children in private houses has no doubt witnessed scenes of great confusion—five or six persons standing about the bed, all advising the patient to take deep breaths as the doctor told him—not to be afraid—that his mother has hold of his hands—the father adding his advice—a nurse holding down the knees of the terrified and struggling child, while the doctor is endeavoring to smother his screams under the ether cone. All of this is injurious to the delicate nervous organization of the patient and should be avoided wherever possible. There should be no one but the nurse in the room—she seats herself on the edge of the bed close to the child's body. On the opposite side the anesthetizer sits facing the child; he tells him to clasp his hands tightly together,

interlocking the fingers, and to hold them firmly (Bodine). It is of the greatest importance not to deceive the child; having once won his confidence, it will ever after be lost if he realizes that his trust has been betrayed. If, then, the patient's attention can be definitely fixed upon some object or purpose and held steadfastly to it, the first stage of anesthesia can be reached without the slightest difficulty or delay. The child's mind is elementary; the ideas are relatively few, and the attention is readily arrested and held. For this reason, children are extremely susceptible to suggestion, and are on this account much more readily hypnotized than are adults. We can take advantage of this principle in the giving of ether, and when we place the cone over the child's mouth and nostrils we tell him to keep his hands tight together and to keep squeezing them tightly all the time. The patient instantly does as he is told, almost without exception, and we assure him that he can breathe without any difficulty and that he is breathing only the fresh air. We then tell him that we are going to put a single drop of ether upon the inhaler, so that he can get accustomed to it gradually, and then, telling him again to keep his hands tightly clasped, we allow him to take a half dozen breaths, then two or three drops of ether are added—in a few seconds ten or fifteen drops—and after a slight interval, twenty or thirty drops about as rapidly as the ticking of a watch. There may be one or two slight coughs. It is unnecessary to make any reference to the breathing, let the child regulate it to suit himself; but he should be told repeatedly to keep his hands tight together, and if he seems at all nervous he should be quietly reassured. Ether should now be allowed to fall by a continual dropping about as rapidly as one could count the drops and continually passing up and down over the open end of the inhaler. In less than two minutes, in the great majority of cases, the eyelids will have closed, the breathing will be quiet and regular, and the child will have fallen into unconsciousness without a single movement and without uttering a sound.

If, now, the lid is raised it will be noticed that the pupil promptly contracts as the light enters it and that it is becoming smaller and smaller, until it reaches a point of maximum contraction at about five minutes from the beginning of the ether. When it is at its maximum point of contraction it is difficult to detect any reflex to

light, and if the ether is pushed still farther the pupil begins to dilate and no longer reacts to light, and may continue up to the point of maximum dilation, in which condition the patient may be in grave danger. Therefore, we must endeavor to so regulate the quantity of ether that the pupil shall not reach the point of maximum contraction, but remain just a little on the safe side of it, so that it instantly reacts to light when the lid is raised. If this is the case, we can rest assured that our patient is not receiving too much ether. With the withdrawal of the anesthetic the pupil again slowly dilates until it has reached its normal size, but the reflex to light is always present. Sometimes, however, this contraction is so prompt and so slight that one must watch with the greatest intentness to detect it. The beginner is often confused by the dilation of the pupil, being at a loss to determine whether the patient is receiving too much or too little ether. Children, as a rule, are ready for operation in six minutes. At the end of four minutes, therefore, they may be placed upon the table and the preparations completed. It is well then to have the child's head slightly lower than the thorax—this drains mucus and secretions more readily from the trachea and larynx and acts as a safeguard against inspiration pneumonia. When muscular relaxation is complete the head should be somewhat retracted and turned well over to the side, being sure there is no constriction about the neck; and this position should be maintained throughout. The child breathes more freely, mucus drains out of the corner of the mouth, and is not so liable to collect in the larynx, trachea or pharynx, and the tongue cannot fall back into the pharynx and obstruct the breathing. When mucus collects in the larynx and causes a rattling sound and seems to interfere with inspiration, the fingers should be placed behind the angles of the jaw and it should be drawn forward, when the air passage will immediately become clear. The excess of mucus may be removed by passing a sponge-holder with gauze directly back through the fauces and mopping out the pharynx.

The ether may be added from time to time as needed. The child can be kept completely relaxed throughout even a prolonged operation without straining or retching. It is *never* necessary to touch the conjunctiva to determine whether or not sensibility is lost, and the careless thrusting of the finger against the cornea has

frequently caused serious corneal ulceration. One judges the depth of the anesthesia in several ways aside from the aid afforded by the pupils. If the patient coughs, swallows, moves the fingers, turns the eyeballs from side to side, sighs, breathes irregularly, these signs indicate a very superficial stage of anesthesia. The tonus of the orbicularis palpebrarum will also serve, for the muscle contracts and resists when the finger is placed upon the eyebrow and draws it upward during the lighter stages of anesthesia. On the other hand, when the breathing is stertorous, or quick and very shallow, and the lips cyanosed, the face dusky or very pale, it is an indication usually that the patient is too deeply narcotized. The color of the face is an excellent guide, and also the regularity of the breathing. In the early stages of anesthesia, coughing and reflex arrest of the breathing, with the cyanosis which always follows, is an indication for a continuation of the ether and not a withdrawal of it, in order to overcome the reflex spasm.

The pulse and blood pressure can be conveniently felt at the temporal artery or the auriculotemporal, the wrist when the hands are beside the head. In profound shock the pulse can usually best be felt in the carotid artery. In children we do not, as a rule, regard a pulse of 140 as unduly rapid, but its character and regularity are always of importance.

The pupil should be watched pretty constantly and ether should not be poured upon the inhaler until one first ascertains the activity of the pupil to light.

Very little ether is necessary after the operation is started, and an ounce will usually suffice for an hour or longer. From time to time the progress of the operation should be noted and the depth of the anesthesia regulated accordingly. The anesthetizer should never hesitate to call the attention of the operator to the patient's condition; but, as a rule, he regulates the stimulation, when this is necessary, according to his own judgment, in order that the surgeon may give his entire attention to the operation.

If a child is permitted to come partially out of the ether during the operation and begins to strain and attempt to vomit and the breathing is for the moment arrested, the etherizer should pour thirty or forty drops of ether on the cone, but should not renew it—the child, when he begins to breathe, will take such deep and rapid inspirations that the ether is diffused very quickly into the

blood, and if too much has been added signs of danger may appear. Therefore one should be content to wait for a few moments and the child soon becomes completely relaxed again. As the operation nears its end the ether may be gradually diminished, so that by the time the wound has been closed and the dressings are being applied the child will turn its head, open its eyes, swallow, sigh, or, in some similar way, show signs of returning consciousness.

Vomiting, should it occur—and it *will* happen in a certain proportion of cases in spite of every care—will usually take place before the child is removed from the table. If the operation has been one upon the throat, there will invariably be vomiting of blood, and usually ten or fifteen minutes later blood will again be vomited. It is just as well to prepare the child's mother for this, in order that she be not unduly alarmed; the bleeding itself will have ceased within a minute or two of the termination of the operation. The child's head should be turned to one side, the angles of the jaw drawn forward and the vomited material received in a towel.

When the pulse suddenly fails during operation, tincture of digitalis, *m* ii-v, strychnia sulphate, gr. $^1/_{200}$-$^1/_{30}$, or nitroglycerin, gr. $^1/_{300}$-$^1/_{100}$, according to the age of the child, should be administered hypodermically. These drugs may be repeated or used in rotation. When the child is much depressed and the skin leaking badly, atrophin sulphate, gr. $^1/_{300}$-$^1/_{100}$, should be given. In sudden collapse with arrest of the heart, the child should be immediately inverted—this will usually start the heart again—and a syringeful of aromatic spirits of ammonia given under the skin. Ether should never be given hypodermically under these circumstances, as the patient's blood is already overcharged with it. Massage of the heart by direct pressure over the precordium and upper abdomen may be tried, but opening the chest for immediate massage of the heart would hardly be warranted in the present state of our knowledge.

When the breathing becomes completely arrested from sudden depression, the tongue should be drawn forward to clear the throat of obstruction and artificial respiration by Sylvester's method immediately commenced and persisted in for twenty minutes or longer, or until the patient begins breathing. Hot normal salt solution, a pint or more, according to the size of the child,

should be run into the median basilic or median cephalic vein, care being taken that the solution in the reservoir is between 110° and 115° F., and that it enters the circulation at a higher temperature than the patient's blood. The solution cools considerably in its passage through the rubber tube, and if it enters the vein lower than the blood temperature it will prove disastrous.

Occasionally children can be etherized while asleep, but it is hardly advisable to attempt to do this, for so great are the chances that the child will be awakened and considerably frightened, that the results are apt to be unsatisfactory.

The facts and suggestions here gathered together cannot be found, so far as the writer is aware, embodied as a whole in any textbook. The object of the paper is to bring out certain facts and principles which, if consistently followed, would rob the etherization of children of much of its anxiety and distress of mind to our little patients, and make of them our trusting and sincere friends for the future, instead of causing them to dread and avoid our very presence.

FAMILIAL APPENDICITIS: FOUR CASES IN ONE WEEK. (Lancet, London, 2: 1163, Dec. 22, 1951). Five members of one family were hospitalized for suspected appendicitis in one week, but in one case the abdominal pain was probably due to mild gastroenteritis. In the first of the four who underwent appendectomy, the appendix was gangrenous, perforated, and covered with omentum which oozed pus when touched. A coil of terminal ileum was adherent to inflamed omentum and appendix. Omentum, ileum, and fibrin had formed the walls of the abscess, which had burst its confines. When tissue forceps were applied to the healthy portion of the appendix of the second patient, the diseased portion burst and a foul smelling fluid emerged. In the third patient, who was known to have had threadworms, appendicitis or mesenteric adenitis was diagnosed. On opening the appendix following its removal, it was found to be congested with swollen mucosa and mucopus and contained one threadworm. The fourth patient had catarrhal appendicitis. Whether the changes found in his appendix began as the follicular appendicitis that may accompany nonspecific mesenteric adenitis is an interesting question.—*Journal A.M.A.*

DEPARTMENT OF ABSTRACTS

KOHN, K. H.; MILZER, A. AND MACLEAN, H.: PROPHYLAXIS OF RHEUMATIC FEVER WITH PENICILLIN GIVEN ORALLY. (Journal American Medical Association, 151:347, Jan. 31, 1953).

A 5-year study of prophylaxis of recurrences of rheumatic fever with penicillin is described. The oral administration of 800,000 U. penicillin daily for 7 consecutive days the first week of each month was shown to be effective in significantly reducing the number of recurrences for 3 successive rheumatic fever seasons. Monthly courses of penicillin rather than daily administration is practical, effective, less costly and gives the patient a rest period from antibiotic effect. According to Keefer the longer the interval of time between the use of the drug the less likely is the patient apt to show reactions, and penicillin by mouth causes few or no disagreeable side reactions and the incidence of hypersensitivity is less than when it is given intramuscularly. Routine year-round prophylaxis of recurrences of rheumatic fever with penicillin orally is advocated.

MICHAEL A. BRESCIA, M.D.

HAMM, F. C. AND HARLIN, H. C.: MANAGEMENT OF THE UNDESCENDED TESTICLE. (New York State Journal of Medicine, 53:295, Feb. 1, 1953).

We recommend the use of the chorionic gonadotrophic hormone in an endeavor to aid the undescended testicle in its migration to the scrotum. Intramuscular injection of 250 to 500 I.U. of the hormone twice weekly for a period of 8 weeks should be given before the age of six. While the literature contains varying reports as to the percentage of cryptorchids which will migrate to the scrotum following hormone therapy, we have encountered nothing like a uniform response. Descent occasionally occurs. When hormone treatment fails, immediate surgery is recommended since the testis must be in the scrotum for its fullest physiologic development and should be so placed for some time before puberty. The preoperative use of hormone has not hindered us in subsequent surgery on the testicle. Very possibly, it has been an aid, on occasions when an increase in size of the testicle, cord structures, and scrotum may have resulted from the hormonal therapy.

AUTHORS' SUMMARY.

BOOK REVIEWS

ON THE BRINGING UP OF CHILDREN. Edited by John Rickman, M.D. Cloth. Pp. 243. Price $3.00. New York: Robert Brunner, Publishers, 1952.

This book contains six essays covering some of the problems which confront the pediatrician from the psychoanalytic angle. These essays are: Planning for Stability by Ella F. Sharpe, Weaning by M. Klein, The Uses of Sensuality by M. P. Middlemore, Questions and Answers by Nina Searl, Habit by Susan Isaacs and the Nursery as a Community by S. Issacs. These essays were originally published in 1936 and reprinted at the present time practically unchanged. One might disagree with the fantasies attributed to infants and children as being grossly exaggerated. At times one feels that the fantasies attributed to the infants are the imaginations of the adult. The essays on weaning and habit are worthwhile reading. MICHAEL A. BRESCIA, M.D.

HEALTH SABOTEURS. By Robert W. Davis, M.D. Cloth. Pp. 306. Price $4.00. New York: Pageant Press, 1953.

This book is addressed to the lay reader and the message it has to offer is that all tonsils and adenoids should be removed as early as possible, preferably before the second year. The author feels quite strongly that practically all the ills that beset mankind can be avoided by the simple measure of doing early tonsillectomies and adenoidectomies. The diseases that would thus be prevented either directly or indirectly include facial deformities, ear disturbances, chest deformities, rheumatic fever, nephritis, hypertension, heart disease, diabetes, cancer, etc. The book is replete with antiquated quotations but most limited in logical scientific facts. This book is particularly dangerous because it presents to the uninitiated a controversial medical problem which should be attacked without emotion but with cold reasoning. The following is an illustration of the author's dogmatic approach: "an early tonsillectomy—is our first weapon of defense against disease, premature aging and early death." The book is neither recommended for the layman nor for the physician. MICHAEL A. BRESCIA, M.D.

A Score Settled...

Sgt. Ronald E. Rosser, U.S. Army
Medal of Honor

WHEN HIS BROTHER was killed in Korea, Sergeant Rosser re-enlisted. Several months later he, too, was in Korea—pinned down on a hill near Pongil-li by surprise Red fire. He saw it cutting up the platoon. Suddenly he jumped to his feet, charged a Red bunker and cleaned it out. In a trench he dispatched five more enemies. Twice, under heavy fire, he returned for more ammunition, then renewed his attack. His furious one-man fight ended with 13 enemy dead, the American platoon saved, and a score settled for Sergeant Ronald Rosser.

"When a man gets back from Korea," says Sergeant Rosser, "it does him good to see people investing in our country's Bonds. Sure, Bonds are a practical way to save, I know. But they also help build *production power*—to equip and protect men overseas. And that's proof that people really care."

Peace is for the strong! For peace and prosperity save with U.S. Defense Bonds!

Now E Bonds pay 3%! Now, improved Series E Bonds start paying interest after 6 months. And average 3% interest, compounded semiannually when held to maturity! Also, all *maturing* E Bonds automatically *go on* earning—at the new rate—*for 10 more years*. Today, start investing in U.S. Series E Defense Bonds through the Payroll Savings Plan.

The U. S. Government does not pay for this advertisement. It is donated by this publication in cooperation with the Advertising Council and the Magazine Publishers of America.

Truly
broad-spectrum
therapy in
each tasty
teaspoonful

CRYSTALLINE
Terramycin
BRAND OF OXYTETRACYCLINE, AMPHOTERIC

oral suspension

Pure, well-tolerated Terramycin in pleasant raspberry-flavored vehicle.

Each 5 cc. teaspoonful supplies 250 mg. of truly broad-spectrum antibiotic effective against gram-positive and gram-negative bacteria, including the important coli-aerogenes group, rickettsiae, certain large viruses and protozoan organisms.

Pfizer *world's largest producer of antibiotics*

ANTIBIOTIC DIVISION, CHAS. PFIZER & CO., INC., BROOKLYN 6, N. Y.

Don't miss
Pfizer
Spectrum
appearing
regularly in
the J.A.M.A.